CLAIMS

What is claimed is:

1. A device for simulating slip of a wheel on a vehicle test bench according to the equation $F_R = F_A \times C$, wherein F_R is a frictional force, F_A is a contact force of the wheel, and C is a coefficient of friction, the device comprising:

a movable test surface to simulate rolling conditions of a wheel which contacts said test surface with a contact force F_A; and

means for changing the contact force F_A in a predetermined manner.

2. The device for simulating slip of claim 1, wherein the means for altering the contact force F_A comprises a lifting/lowering device.

3. The device for simulating slippage of a wheel in a vehicle test bench of claim 2, wherein the lifting/lowering device can vertically adjust a hub of the wheel while the wheel is rotating.

4. The device for simulating slip of claim 2, wherein the lifting/lowering device holds the wheel with a holding force and is controllable by one of hydraulic pressure, electrical signals, and linear motors, the device for simulating slip further comprising means for measuring the holding force, whereby the holding force can be used to determine the contact force.

5. The device for simulating slip of claim 2, wherein the lifting/lowering device can follow a tracking/steering angle and a kingpin angle of the wheel, whereby the

lifting/lowering device can secure the wheel in a direction transverse to the direction of travel.

6. The device for simulating slip of claim 2 further comprising:

a wheel adapter for coupling the wheel to the lifting/lowering device,

a bearing unit rotatable about a pivot axis so as to change the track of the wheel, the wheel adapter being rotatably arranged in the bearing unit;

a mount pivotably mounted to joint blocks;

a plurality of connecting arms connecting the bearing unit to the mount;

linear drives for lifting and lowering in the joint blocks in linear guides in a predetermined way;

a supporting block on which the linear guides and the linear drives are arranged; and

a base plate for attaching the supporting block to an underlying surface.

7. The device for simulating slip of claim 1 further comprising means for changing the coefficient of friction.

8. The device for simulating slip of claim 7, wherein the means for changing the coefficient of friction comprise a nozzle for introducing water between the wheel and the surface of the test device.

9. The device for simulating slip of claim 2, further comprising a controller for controlling the lifting/lowering device, the controller being integrated into a controller of the vehicle test bench.

10. The device for simulating slip of claim 2 further comprising a plurality of lifting/lowering devices for respective wheels, and a controller for connecting the lifting/lowering devices.

11. A method of simulating slip of a wheel on a vehicle test bench comprising a movable test surface for simulating rolling conditions of a wheel which contacts said surface with a contact force F_A, said method comprising displacing the contact force F_A from the wheel to a lifting device in a predetermined way by lifting the wheel off the surface as the wheel rotates.

12. The method of simulating slip of claim 11 comprising:

completely displacing the contact force F_A from the surface to said lifting device by lifting the wheel completely off the surface;

determining the absolute value of the contact force F_A by means of a measuring device while said wheel is completely off said surface;

determining a maximum traction force F_Z which can be transmitted to the surface based on said absolute value;

calculating a coefficient of friction C with the equation $F_Z = F_A \times C$, where F_A is the absolute value; and

setting the friction force F_R according to the equation $F_R = F_A \times C$ by controlling the contact force F_A.

13. The method of simulating slip of claim 12 wherein said maximum tractive force F_Z is changed in accordance with a predefined test program.

14. The method of simulating slip of claim 12 wherein said coefficient of friction is changed in accordance with a predefined test program.